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CropWatch No. 98-18, July 24, 1998

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 98-18
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Scout for second generation ECB eggs

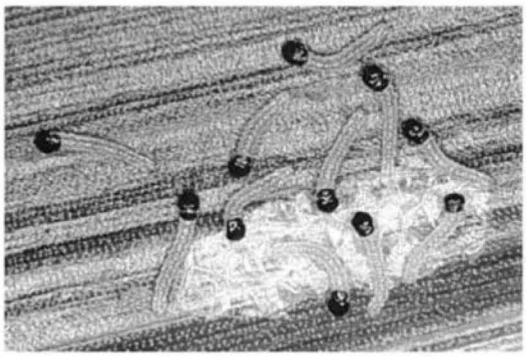
Second generation European corn borer moths have begun to emerge in south central Nebraska and will be laying eggs during late July and August in this area (see last week's *Crop Watch* for predicted egg laying dates).

Fields with green silks during the peak moth flight period are most susceptible to second generation egg laying. The white, flat eggs overlap each other like fish scales and are laid in masses of 5-40 eggs. Eggs are most likely found on the underside of leaves, near the mid-rib, on the ear leaf and the three leaves above or below the ear leaf. Approximately 90% of the egg masses will be found on these middle seven leaves. A black spot is visible on the eggs for about 24 hours before they hatch. The spot is the head of the developing corn borer. This stage is often referred to as the black head stage.

Begin scouting fields soon to determine when egg laying begins in your area. To determine whether control would be profitable, examine 25 plants at four sites per field (100 plants total). Record the number of egg masses and the number of plants sampled. If you sampled only the middle seven leaves, multiply the number of egg masses by 1.1 to estimate the total present over the whole plant. Use this adjusted mean in the worksheet. Complete the worksheet calculations (also available in NebFact 98-365, *Second generation European corn borer scouting and treatment decisions*) to determine if an economic infestation is present. You will also need to know:

-crop stage
-expected yield
-expected market price for corn
-percent control with insecticide
-cost of control (insecticide plus application costs)

An interactive version of this worksheet is available at *http://www.ianr.unl.edu/forms/forms.skp/ecb_2nd.html*



European corn borer egg larvae

Use of this worksheet will allow you to better evaluate the factors influencing the cost/benefit relationship for second generation European corn borer treatments. Average values are suggested in the worksheet, but may be modified for local conditions.

1) Borer survival is suggested to be 15%. Larval survival varies with weather conditions and irrigation. In irrigated corn, larval survival may be 20% or more, while in dryland corn with no significant rainfall, it may be 10% or less. Survival of eggs and small larvae decreases greatly in hot, dry weather or with extended periods of heavy rain.

2) Yield loss will be about 4% per borer for infestations occurring before silks turn brown and 3% per borer after silks turn brown, but before blister stage. These averages are based on published research, but only account for physiological yield losses (reduced grain production) and do not consider yield loss from stalk breakage or ear drop. These factors are difficult to predict and vary with hybrid, cultural practices and weather.

3) Percent control with insecticides is suggested to be 70%; change this value if you think that control will be different under your situation.

Infestations are most damaging when corn borers enter the stalk early in the reproductive cycle of

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Inside

Late season weed control in soybeans

Much of the state's soybeans are beginning to bloom, a stage when any injury to the crop can severely affect yield. This makes late season weed control more difficult.

Field updates

Richard Ronnenkamp, Extension educator in Boone and Nance counties: Most crops here look excellent. Producers with irrigation are using it during the critical pollination stage for corn. Soybean fields are from fair to excellent. Producers are baling second cutting alfalfa without rain. There is some leafhopper activity.

Del Hemsath, Extension educator in Frontier County: Spider mites are being found on lower leaves of both irrigated and eco-fallow corn. The hot dry weather and stress is ideal for them. Corn rootworm beetles are emerging. Sorghum fields seem to have an unusually high number of corn leaf aphids in the whorls, especially on ecofallow fields.

Ralph Anderson, Extension educator in Buffalo County: Most crops are looking good. A few acres are late due to wet fields and a very few required European corn borer treatment. A few fields were treated for rootworm beetles last week. We suspect one field is showing insecticide resistance, but that has not been confirmed. Populations need to be caught early and we need to develop a strategy for early control and\or elimination if possible.

Corn appears to be pollinating well, in spite of the heat. We may have been saved by the high humidity and absence of high, dry south winds. We are catching a few Western bean cutworms in the light trap and a few more European corn borer moths. European corn borer flight should reach 50% peak by July 29.

Waterhemp is one of the main reasons producers are facing difficult weed control decisions. Waterhemp tends to germinate over an extended time, often requiring more than one postemergence herbicide application.

If a herbicide-resistant crop was used, a second postemergence herbicide application can be made with respect to weed growth stage and not crop growth stage. This is because herbicide-resistant crops are resistant to herbicides throughout all stages. Because of this, postemergence herbicide applications can be made at bloom with no crop injury.

Control of late emerging weeds or escapes in conventional soybeans is very difficult after blooming has begun. Often the weeds are larger and more difficult to control. ALS-resistant waterhemp can be suppressed with a contact herbicide with a cell membrane disrupter such as Cobra or Blazer. Although these herbicides are labeled for use during bloom stage, they tend to cause crop injury, which could impact yield. These herbicides burn all plant material they contact and injury to the crop at this stage is not recommended. If a producer must spray, doing so at the earlier stages of bloom is likely to result in less yield loss.

Alex Martin
Extension Weed Specialist
Jeff Rawlinson
Extension Assistant Weed Science

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European corn borers *(Continued from page 161)*

corn. There is a short time between first egg hatch and significant stalk tunnelling when corn borers are best controlled. Concentrate scouting efforts in this early egg laying period and repeat every three to five days. Often second generation egg laying may extend for 21 days or more. Although later hatching corn borers do not directly reduce grain yield as much, they may still cause stalk breakage or ear drop. Early harvest of fields damaged by corn borers and selecting varieties with good stalk strength and resistance to stalk rot can reduce this loss.

An interactive ECB worksheet is available at *http://www.ianr.unl.edu/forms/forms.skp/ecb_2nd.html*

If treatment is needed, time insecticide applications to coincide with the beginning of egg hatch to achieve acceptable control. Generally, liquid and granular formulations of the same insecticide are equally effective against corn borer larvae, but considering other pests that may need to be controlled at this time of year (western bean cutworms, rootworm beetles, grasshoppers, spider mites), liquids may be preferred. Rates and restrictions of registered insecticides for European corn borer control can be found on the label or at the UNL Entomology Home Page *http://www.ianr.unl.edu/ianr/entomol/fldcrops/fldcrops.htm*

Bob Wright, Extension Entomologist, South Central REC, Clay Center

Management worksheet

Second generation European corn borers

_____ Number of egg masses per plant x 3 borers per egg mass* = _____ borers per plant

_____ Borers per plant x 4% yield loss per borer** = _____ percent yield loss

_____ Percent yield loss x _____ expected yield (bu per acre) = _____ bushels per acre loss

_____ Bushels per acre loss x $_____ sale price per bu = $_____ loss per acre

$_____ Loss per acre x 70% control*** = $_____ preventable loss per acre

$_____ Preventable loss per acre

—$_____ Cost of control (product + application costs)

= $_____ Profit (+) or loss (-) per acre if treatment is applied

If preventable loss exceeds cost of control, insecticide treatment is likely to result in economic benefit.

* Assumes survival rate of three borers per egg mass; may vary with weather and egg mass size.

** Use 3 percent loss per borer per plant if infestation occurs after silks are brown. The potential economic benefits of treatments decline rapidly if infestations occur after the corn reaches the blister stage.

*** 70% is an average, you may use another value if desired.

Wheat videoconference examines new varieties, production tips

Wheat producers can take a comprehensive look at wheat management, from variety selection to harvest, during *Growing Wheat Well*, a statewide video conference August 19.

University of Nebraska researchers and Extension specialists will address continuous wheat cropping systems; varieties resistant to the Russian wheat aphid; weed control; wheat streak mosaic; grading, marketing and pricing; irrigated varieties; and how to find your way around the Internet to find current wheat publications. Participants will also see this year's UNL field trial data and see which varieties performed well. The video conference will be held from 8 to 10 p.m CT (7-9 p.m. MT), followed by a call-in phone discussion with the experts.

Presenters include David Baltensperger, Extension crop breeding specialist; Gary Hein, Extension entomologist; Bob Klein and Drew Lyon, Extension cropping system specialists, Karen DeBoer, Extension educator; Mike Turner, agricultural economist; David Shelton, Extension cereal chemist; and John Watkins, Extension plant pathologist. Other experts who will be available during the videoconference to answer questions are Len Nelson, Extension crop variety and seed production specialist, Roger Hammons and Steve Knox of the Nebraska Crop Improvement Association, and Sharon Quisenbery, head of the Department of Entomology, who will be moderating the sessions. Nelson will be providing yield data from 1998, including what varieties performed best, and what to look for in selecting varieties.

You can watch this program on your home satellite on Galaxy 9 Transponder 2 or by attending one of the following host sites.

Alliance, High School Ag Building

Alma, Harlan County Extension Office, Courthouse, 708 2nd St.

Auburn, Nemaha County Extension, 4-H Building at fairgrounds

Beatrice, Gage County Extension Office, 115 W. Scott St.

Clay Center, South Central Research and Extension Center

Chadron, Dawes County Extension, fairgrounds, 4-H Building

Curtis, Nebraska College of Technical Agriculture, 404 E. 7th

Falls City, USDA Service Center on old Hwy 73

Geneva, Geneva Public Library, 11th and G

Harrison, Sioux County Extension Office, Courthouse, 325 Main Street

Hastings, Adams County Extension, Fairgrounds Activity Center

Hebron, Thayer County Extension Office, Courthouse, 225 North 4th St.

Kearney, Buffalo County Extension Office, 1400 East 34th St.

Kimball, Kimball/Banner County Extension Office, 114 East 3rd St.

Lincoln, Lancaster County Extension Office, 444 Cherrycreek Road

North Platte, West Central Research and Extension Center.

Ogallala, Keith County Extension, Fairgrounds Exhibit Building, 1100 W. 5th St.

Oshkosh, Garden County Extension, Courthouse Annex, 611 Main St.

Rushville, Sheridan County Extension Office, 105 Loofborrow St.

Scottsbluff, Panhandle Research and Extension Center, 4502 Ave. I.

Sidney, Lodgepole Valley Youth Camp, Hwy 19 and Toledo St.

Wilber, Saline County Extenison Office, 308 W. Third St.

You can access the on-line phone discussion available for 30 minutes after the videoconference by calling: Panhandle: 800-562-1569; West Central: 800-562-1571; and Southeast and South Central: 800-562-1576

Roger Hammons, Secretary-Manager
Nebraska Crop Improvement Association

Preregister and receive free wheat related material by calling 800-755-7765.

Diagnostic Clinic Update

Wheat diseases diagnosed in the last two weeks were common bunt, black chaff, and sooty mold. Sooty mold is favored by wet weather during maturity of the head.

Corn diseases included root rot and bacterial stalk rot. Leaf spots on corn identified have been holcus leaf spot, eyespot, helmithosporium leaf spot, gray leaf spot, and common rust. Maize chlorotic mottle virus was detected in several fields near Holdrege. Soybean diseases identified in the clinic were Rhizoctonia root and corticle rot, Pythium root rot, bacterial blight, and stem canker.

Loren J. Giesler, Coordinator, Diagnostic Clinic

Mobile nurseries to help researchers detect new strains of dry bean rust in the field

Researchers trying to stay ahead of newly developing races of dry bean rust need help from producers with fields where rust is present.

Rust outbreaks have the potential for significantly reducing profits for the state's dry bean producers. In 1996, bean rust losses in the High Plains were estimated at $8,750,000 when no control was applied. With fungicide applications those losses could be reduced to $2,275,000.

While fungicides provide some control, they can be costly. Fungicide costs for the 55,000 acres encountering mild to severe rust in 1996 would be $1.5 million. Development of dry bean varieties resistant to rust will reduce producers' out of pocket expenses.

Many of the pinto and great northern varieties grown in Nebraska have shown susceptibility to rust. New pinto varieties such as "Chase" and "Apache" have resistance (Ur-3 gene) to the rust races found on the U.S. Central High Plains in the past five years. Nearly 10 years ago, however, a race that could cause a susceptible reaction on bean lines containing the Ur-3 gene was reported in the Midwest.

In the past 10 years, dry bean producers have seen a pattern of resistant varieties being released but soon becoming susceptible to rust. "Olathe" was released in the 1980s but is now susceptible to all of our rust races and the great northern bean variety, "Beryl", recently was identified as losing its resistance. In Central America most sources of rust resistance have been overcome even before their release. That pattern and other evidence from global studies indicates that the bean rust fungus is one of the most variable pathogens known and must be monitored each season to look for new pathogenic variants or races.

New pinto varieties such as "Chase" which has rust resistance derived from the Ur-3 gene are being planted on increasing numbers of acres in Nebraska. Will this gene or others being incorporated in bean germplasm be overcome by the pathogen when it is widely grown in cultivars?

University of Nebraska researchers and Extension educators are working together to gather timely information critical to understanding the changing development of rust strains. A mobile nursery of bean genotypes with different rust resistance genes has been established. This nursery is placed in rusted bean fields and 8-10 days after exposure, data on rust reaction can be used to evaluate the pathogen virulence. Myrt West, plant pathology technician at the Panhandle Research and Extension Center, is growing the nurseries and coordinating their availability.

We would like dry bean producers to report fields with rust symptoms to any of the educators listed here so that the portable nursery can be placed in the field and the type of rust can be tested and identified.

We are working closely with UNL Professor Dermot Coyne's breeding program to have the most relevant pathotypes of the rust fungus available for screening. This project is partially supported by the Nebraska Dry Bean Commission.

Jim Steadman, Professor
Plant Pathology

We need your help

Please report fields with rust symptoms to any educator listed here:

Tony Merrigan, Box Butte County, (308) 762-5616
Karen DeBoer, Cheyenne County, (308) 254-4455
Milt King, Garden County, (308) 772-3311
Ray Weed, Kimball-Banner counties, (308) 235-3122
Tom Holman, Scotts Bluff County, (308) 436-6622
Jim Schild, Scotts Bluff County, (308) 436-6622
Tony Hindman, Sheridan County, (308) 327-2312
Jenny Nixon, Sioux County, (308) 668-2428

Dry bean field day Aug. 19

Dry edible bean producers can view the University of Nebraska field trials and learn the latest research results during the Annual Dry Edible Bean Field Day. It will begin at 1 p.m. Aug. 19 and conclude with a hog roast with beans at 5 p.m. at the Panhandle Research and Extension Center near Scottsbluff.

Specialists will cover production practices and discuss industry issues as participants view test plots.

Sponsors are the Nebraska Dry Bean Growers Association and the University of Nebraska.

John Smith, Extension Engineer
Panhandle Research and Extension Center

Avoid 2,4-D in corn at tassel

Due to the higher-than-normal precipitation across much of the state, broadleaf weeds are very prominent in corn this year. Producers have asked about applying a growth regulator such as 2,4-D at tassel to control these weeds. At this stage, growth regulators are very damaging to corn. Growth regulators cause abnormal cell division in the growing tissue of the plant they are applied to. The tassel is the youngest, most actively growing tissue on corn that could contact the herbicide. This injury will reduce pollination, decreasing yield. If broadleaf weeds are a problem, apply a growth regulator herbicide **after** silks turn brown.

Alex Martin, Extension Weed Specialist
Jeff Rawlinson, Extension Assistant Weed Science

GDD and Crop Water Use Data (Through 7/21)

Station	Crop	Emer. date	Actual GDD	Normal GDD	Water use Past week	Past 3 days	Past 1 day	Future 3 days	Future week	MC
Ainsworth	Corn	5/15	1208	1213	.34	.30	.18	.19	.20	3
	Sorghum	5/24	977	1021	.21	.20	.13	.14	.16	3
Alliance	Corn	5/15	1092	1074	.34	.32	.24	.24	.25	3
	Sorghum	5/24	977	982	.23	.22	.17	.18	.19	3
Beatrice	Corn	5/15	1448	1442	.34	.39	.38	.30	.27	3
	Soybean	5/20	1347	1377	.34	.39	.38	.30	.27	3
	Sorghum	5/24	1280	1319	.31	.37	.37	.30	.27	3
Champion	Corn	5/15	1268	1196	.39	.40	.42	.34	.31	3
	Soybean	5/20	1186	1141	.37	.39	.41	.34	.30	3
	Sorghum	5/24	1129	1094	.31	.33	.35	.30	.27	3
Concord	Corn	5/15	1309	1305	.27	.25	.14	.17	.18	3
	Soybean	5/20	1205	1247	.26	.25	.14	.17	.18	3
	Sorghum	5/24	1160	1197	.22	.22	.13	.15	.17	3
Holdrege	Corn	5/15	1383	1290	.39	.42	.39	.32	.29	3
	Soybean	5/20	1288	1232	.38	.42	.39	.32	.29	3
	Sorghum	5/24	1218	1183	.33	.38	.36	.30	.28	3
McCook	Corn	5/15	1389	1234	.41	.43	.45	.36	.31	3
	Sorghum	5/24	1231	1130	.36	.39	.42	.34	.30	3
Mead	Corn	5/22	1320	1339	.27	.30	.32	.26	.24	3
	Soybean	5/20	1354	1367	.27	.30	.32	.26	.24	3
	Sorghum	5/24	1296	1309	.25	.29	.31	.26	.23	3
North Platte	Corn	5/15	1263	1201	.40	.44	.46	.35	.31	3
	Sorghum	5/24	1125	1099	.31	.36	.39	.30	.27	3
Ord	Corn	5/15	1325	1298	.35	.31	.24	.23	.22	3
	Soybean	5/27	1144	1150	.32	.30	.24	.22	.21	3
	Sorghum	5/24	1178	1190	.28	.27	.22	.21	.20	3
Red Cloud	Corn	5/15	1569	1314	.39	.43	.42	.34	.30	3
	Soybean	5/20	1458	1255	.39	.43	.42	.34	.30	3
	Sorghum	5/24	1376	1205	.38	.43	.42	.34	.30	3
Rockport	Corn	5/15	1604	1444	.30	.35	.34	.27	.24	3
	Soybean	5/20	1485	1377	.30	.35	.34	.27	.24	3
	Sorghum	5/24	1409	1317	.30	.35	.34	.27	.24	3
Scottsbluff	Corn	5/15	1140	1066	.31	.30	.23	.24	.24	3
	Sorghum	5/24	1016	974	.21	.22	.17	.18	.19	3
Sidney	Corn	5/15	1093	1086	.40	.40	.42	.37	.34	3
	Sorghum	5/24	974	992	.27	.28	.30	.27	.26	3
York	Corn	5/15	1413	1366	.30	.31	.31	.26	.24	3
	Soybean	5/20	1308	1306	.30	.31	.31	.26	.24	3
	Sorghum	5/24	1247	1252	.27	.28	.29	.25		

Growing degree days required for Type 3 maturity class for the following crops: corn, 2750; soybeans, 2450; and sorghum, 2369.